



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,764	12/12/2003	Kilian Hintermann	31509-199595	8134
26694	7590	04/14/2006	EXAMINER	
VENABLE LLP			MARTINEZ, CARLOS A	
P.O. BOX 34385			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20045-9998			2853	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. .

10/733,764

Applicant(s)

HINTERMANN, KILIAN

Examiner

Carlos A. Martinez

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/12/03, 02/28/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse in the reply filed on February 28, 2006 is acknowledged.

Upon further examination and consideration, the Office withdraws the requirement for restriction for the invention and an action on all claims will be given.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

“Figures 1a to 1d” (pg. 2, line 21). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Further, the drawings are objected to because lines/arrows are directed to Fig. 5 with no reference numbers. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the

Art Unit: 2853

application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Specification

4. The abstract of the disclosure is objected to because the abstract page has text not relevant to the abstract (i.e. "(Fig. 1)"). Correction is required. See MPEP § 608.01(b).

Art Unit: 2853

The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

6. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 2 is objected to because it recites the same limitations that are stated in claim 1 without providing a further limitation. Therefore, claim 2 is objected since it provides no further limitation to the parent claim (claim 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US6457823) in view of Yoshida (US6443554).

Art Unit: 2853

- Cleary discloses a printing device with a multitude of print head devices (refer to elements 28, 28-1, 28-2, 28-3, and 28-4 of Fig. 2A and Fig. 2B) which can be moved in a first direction over the material to be printed (refer to lines 17-34 of column 5), arranged side-by-side (refer to elements 28-1, 28-2, 28-3, and 28-4 of Fig. 2A), and at least one UV light-source arrangement (refer to element 24-1 and 24-2 of Fig. 2A and lines 62-64 of column 3) to the side of the moveable print head devices for admitting UV light to ink which cures by exposure to UV light (refer to lines 8-12, 49-51, and 61-64 of column 4), wherein the alignment of each arrangement is essentially in vertical direction, in which the print head devices are movable (refer to lines 15-18 of column 4); in each of the print head devices the arrangements, that are arranged side-by-side, of printing elements in one line are in each case offset by a micro-step in the direction of the line (refer to elements W_1 of Fig. 2A and Fig. 6; and lines 17-34 of column 5); the UV light-source arrangement, of which there is at least one, is movable together with the print head devices (refer to lines 59-67 of column 3 and lines 1-3 of column 4); the UV light-source arrangement, of which there is at least one, is designed such that it is suitable for partially curing the ink without completely curing it (refer to lines 50-60 of column 1); and furthermore, the printing device comprises a further UV-curing light-source arrangement for curing the ink (refer to lines 55-63 of column 6).

Art Unit: 2853

- Though Cleary speaks of a multitude arrangement, Cleary fails to specifically mention that the multitudes of arrangements are piezotechnical printing elements in one line (jetting assemblies).
- Yoshida teaches a multitude of arrangements of piezotechnical printing elements in one line (refer to lines 23-34 of column 13 and lines 63-67 of column 14; refer to element PE of Fig. 4(a) where the piezoelectric element is in one line along the nozzles).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify a printing device, as taught by Cleary, with a multitude of arrangements of piezotechnical printing elements in one line, as taught by Yoshida, for the purpose using piezoelectrical elements which are well known in the art of printing/printheads.

With respect to claim 2, since claim 2 provides not further limitation to the parent claim (claim 1) it is rejected along with claim 1.

With respect to claim 3, Cleary fails to disclose print head devices that are arranged one behind the other in the direction of the lines, and a second series of print head devices arranged one behind the other in the direction of the lines, beside the first series, wherein the two series are arranged so as to be offset in the direction of the line; however, Yoshida discloses print head devices that are arranged one behind the other in the direction of the lines, and a second series of print head devices arranged one behind the other in the direction of the lines, beside the first series, wherein the two series are

Art Unit: 2853

arranged so as to be offset in the direction of the line (refer to Fig. 6 and lines 53-67 of column 15). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify a printing device, as taught by Cleary, with print head devices that are arranged one behind the other in the direction of the lines, and a second series of print head devices arranged one behind the other in the direction of the lines, beside the first series, wherein the two series are arranged so as to be offset in the direction of the line, as taught by Yoshida, for the purpose of providing greater surface area application.

With respect to claim 4, Cleary teaches a printing device that has one UV light-source arrangement for partial curing of the ink is arranged on each side of said print head devices (refer to lines 8-12 and 49-51 of column 4), wherein each UV light-source arrangement for partial curing of the ink can (refer to lines 50-60 of column 1) emit a light band at least at a length of all print head lines arranged one behind the other (refer to elements 24-1 and 24-2 of Fig. 2A; and lines 17-34 of column 5).

With respect to claim 5, Cleary teaches the curing and partial curing of ink with UV light-source arrangements and that the UV light sources are arranged to the side of the moveable print head devices which can be moved in the first direction over the material to be printed and comprises a multitude of arrangements, arranged side-by-side. Where the reference to “besides one of the UV light-source arrangement” corresponds to UV light-source – element 24-1 – in Fig. 2A, and the reference to “a further UV light-source arrangement” corresponds to UV light-source – element 24-2 – in Fig. 2A. However,

Art Unit: 2853

Cleary fails to disclose a further multitude of print head arrangements that are piezotechnical printing elements in one line. Yoshida teaches a further multitude of print head arrangements that are piezotechnical printing elements in one line (refer to elements K, C1, C2, M1, M2, and Y of Fig. 6; and lines 18-67 of column 15). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify a printing device, as taught by Cleary, with a further multitude of print head arrangements that are piezotechnical printing elements in one line, as taught by Yoshida, for the purpose of providing greater surface area application and increased resolution due to having further print heads arrangements with which to provide more dots per inch.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US6457823) in view of Yoshida (US6443554), as applied to claim 5 above, and further in view of Suzuki (US6786589).

- Cleary (in view of Yoshida) teaches a first multitude and a further multitude of print head devices which can be moved in the first direction over the material to be printed, arranged side by side, of piezotechnical printing elements in one line; however, Cleary (in view of Yoshida) fails to teach that there could be a second multitude of print head devices which can be moved in the first direction over the material to be printed are of the same type as a multitude of arrangements of piezotechnical printing elements in one line.
- Suzuki teaches a second multitude of print head devices that can be moved in the first direction over the material to be printed are of the same type as a multitude of arrangements of piezotechnical printing elements in one line

Art Unit: 2853

(refer to element 3 of Fig. 2 and element 13 of Fig. 4; and lines 2-13, 30-54 of column 12).

- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify a printing device, as taught by Cleary (in view of Yoshida), with a second multitude of print head devices that can be moved in the first direction over the material to be printed are of the same type as a multitude of arrangements of piezotechnical printing elements in one line, as taught by Suzuki, for the purpose of providing further arrangement for printing and curing while also providing greater surface area application and increased resolution due to having further print heads arrangements with which to provide more ink dot application per inch.

Allowable Subject Matter

10. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: Claims 7 and 8 are allowable over the art of record because the prior art does not teach a method for digital printing in particular comprising a printing device in several colors where the printing of each selected color is carried out by: (A) selective printing of selected dots in a first matrix of dots in the selected color, which dots are spaced apart by a distance which exceeds the dot size, by means of the print head lines of the first print

Art Unit: 2853

half, which print head lines are located side by side between two UV light-sources; (B) partial curing of the print droplets by means of a middle UV light-source; (C) selective printing of selected dots of a second matrix of intermediate dots in X-direction with the parallel print heads of the other print half, in each case using the same color; (D) partial curing of these intermediate dots, using a first outer UV light-source; (E) advancing the material to be printed in Y-direction by half the length of the distance between the jets within a jet head line; (F) selective printing of selected dots of a third matrix of intermediate dots, in relation to the first or second matrix, in Y-direction in the selected color, using the print heads of the second print half; (G) partial curing of the print droplets by means of the middle UV light-source; (H) selective printing of selected dots of a fourth matrix of intermediate dots in X-direction, in relation to the third matrix, in the selected color, using the print heads of the first print half; (I) partial curing of these intermediate dots, using a second outer UV light-source; (J) advancing the material by the length of a print head line; (K) repeating steps (A) to (I) until the print image is generated on the material in the selected color; and (L) curing all the dots, using a curing UV light-source; wherein printing takes place according to steps (A) to (I), at first in a first color, and then at each repeat step (K) printing is added in a further color, until print as been applied in all colors, and whereby at the end of the material to be printed, first printing of the first color and then printing of subsequent colors in turn is completed

Art Unit: 2853

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos A. Martinez whose telephone number is (571) 272-8349. The examiner can normally be reached on 8:30 am - 5:00 pm (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CAM
04/06/2006


HAI PHAM
PRIMARY EXAMINER